

PATENT SPECIFICATION

1,094,756

DRAWINGS ATTACHED.

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GR. DIV. 360-15

COMPLETE SPECIFICATION.

Improvements in and relating to Brushes.

We, THE BRITISH BRUSH MANUFACTURERS RESEARCH ASSOCIATION of 80, Coleman Street, London, E.C.2, England, a British Company, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to brushes and provides brush components which facilitate and simplify the manufacture of brushes.

For many years, brushes have been made with animal bristles, hair or horny material, such as cut filaments of baleen, known as whalebone, vegetable fibres or metal wire but in recent years filaments of synthetic resins and other so-called plastics have become available and have been used as brush filling materials. The term "filling material" as applied to brushes therefore includes any suitable natural or synthetic fibrous or filamentary material.

Bunches or tufts of filling material, in single or double strands and sometimes bound tightly at one end, by a so-called "thrumming" of thread or wire, are known as knots.

The secure fixing of filling material into stocks or handles is the crux of the brush-making craft and many different methods are used, according to the kind of filling material and the purpose for which brushes are required.

It is known to provide brush knots with ends shaped to fit into recesses or grooves in a holder and it is also known to fuse together the ends of nylon or other fusible filling material for a brush, forming a flared or bell-shaped base which is engaged and cemented in a collar cemented on a handle.

The present invention provides brush knots

which in themselves ensure the holding fast together of the filling material and also embody means for simple but secure engagement with a holder, such as a stock or handle.

According to the invention, a brush knot consists of thermo-plastic filling material moulded with a root portion to fit a complementary part of a stock, handle or other holder, the shape of the root portion being such that it can be secured to the complementary part solely by inter-engagement therewith positively in both axial directions.

In a preferred embodiment the root portion of the knot, called for convenience the knot root, is moulded with a screw thread to engage with a complementary screw thread on the holder part. The screw thread on the knot root may be an external thread so that the knot fits as a plug or spigot in an internally screw-threaded socket part of a holder or the knot root may be recessed with an internal screw thread to fit over an externally screw-threaded spigot part of a holder.

Other positive joints between the knot root and its holder may however be used. For example, other kinds of joints which inter-engage by relative axial and rotary movement, such as bayonet joints, may be used.

Further, stiffly resilient saw-tooth or barbed lugs or ridges on one member to snap into corresponding recesses or grooves in the other may be used.

As the filling material composing the knot is a thermo-plastic material, such as a polyamide, polypropylene, polyethylene or polyurethane, the root may be moulded from the filling material itself, the ends of single or double strands of a knot of filling material

being fused together and moulded under heat and pressure, such as in a split compression mould, to the form of a screw-threaded plug for example.

- 5 Stocks, handles or other holders may be moulded, or have moulded parts, for engagement with the brush knot roots or, in the case of wooden stocks for example, the screw-threaded or other knot-engaging parts
10 may be machined.

The invention is illustrated, by way of example, on the accompanying drawings, in which:—

- 15 Figs. 1 to 4 show, somewhat diagrammatically, the sequential stages in forming a brush knot with a root moulded from the thermo-plastic filling material itself and

- 20 Figs. 5 to 8, Figs. 9 to 12 and Figs. 13 to 16 respectively similarly show alternative embodiments of the invention with a bonding agent added in the moulding of the root.

- 25 In the embodiment shown by Figs. 1 to 4, a bunch of thermo-plastic strands 1, either doubled strands as shown by Fig. 1 or single strands as shown by Fig. 2, is gripped by one end between the closed halves 2 and 3 of a split mould having a screw-threaded cavity which, under applied heat and pressure, fuses the ends of the strands 1 together and moulds them into an externally screw-threaded root 4, as shown by Fig. 3, to screw into a screw-threaded socket 5 in a stock 6 which, as shown by Fig. 4, is a cylindrical brush stock on a shaft 7.

- 35 It will be seen that the bunch of strands 1 with the integral moulded root 4, from which the strands are caused to splay by the lateral compression applied in the moulding operation, forms a brush knot ready for simple screwing into a socket 5 and that brushes can simply be assembled from such knots and stocks of any desired type.

- 40 In the embodiment shown by Figs. 5 to 8, an annular bunch 8 (Fig. 5) of thermo-plastic filling material is inserted, together with any suitable bonding agent, such as a synthetic resin in liquid or powder form, into the cavity of a cup-shaped mould 9 (Fig. 6) which has a central, screw-threaded core 10. By heating or other processing to cause the bonding agent to conform to the mould 9, a root 11 with an internal screw thread is formed on the bunch 8 of filling material which then forms a knot (Fig. 7) and can be unscrewed from the core 10 and screwed on to a screw-thread spigot 12 in a cup 13 of a brush handle 14 (Fig. 8).

- 50 The embodiment of Figs. 9 to 12 is similar to that of Figs. 5 to 8 except that a simple bunch 15 of thermo-plastic filling material is formed in a screw-threaded mould 16 with an externally screw-threaded root 17 to screw into a socket 18 in a handle 19.

- 65 In the embodiment of Figs. 13 to 16, a

small bunch 20 of thermo-plastic filling material has one end formed, by a bonding in a mould 21, into a root 22 which has the shape of a conventional counter-sunk screw to make up a knot (Fig. 15) for insertion, filling first, radially inwardly through a tapped hole 23 in a ring stock 24. Such a stock 24 filled with screw-knots (Fig. 15) at angular intervals forms a ring brush such as is used in machines for cleaning, lubricating or coating purposes.

WHAT WE CLAIM IS:—

1. A brush knot consisting of thermo-plastic filling material moulded with a root portion to fit a complementary part of a stock, handle or other holder, the shape of the root portion being such that it can be secured to the complementary part solely by inter-engagement therewith positively in both axial directions.
2. A brush knot according to claim 1, in which the root portion is moulded from the filling material itself fused together and moulded under heat and pressure.
3. A brush knot according to claim 1, in which the root portion is moulded with addition of a bonding agent to the filling material.
4. A brush knot according to claim 1, 2 or 3, in which the root portion has a shape to inter-engage, with the complementary part, by relative axial and rotary movement.
5. A brush knot according to claim 4, in which the root portion has a screw thread to engage with a complementary screw thread of a holder.
6. A brush knot according to claim 5, in which the root portion has an external screw thread.
7. A brush knot according to claim 5, in which the root portion is annular coaxially with the knot and has a coaxial internal screw thread.
8. A brush knot according to any of the foregoing claims, in which strands of the filling material splay from the root portion as a result of laterally-applied compression during moulding of the root portion.
9. A brush knot substantially as described with reference to Fig. 3, Fig. 7, Fig. 11 or Fig. 15 of the accompanying drawings.
10. A brush comprising a stock, handle or other holder and one or more brush knots according to any of the foregoing claims.
11. A brush substantially as described with reference to Figs. 3 and 4, Figs. 7 and 8, Figs. 11 and 12 or Figs. 15 and 16 of the accompanying drawings.

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Agents for the Applicants.

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1094756 COMPLETE SPECIFICATION

3 SHEETS This drawing is a reproduction of
the Original on a reduced scale
Sheet 1

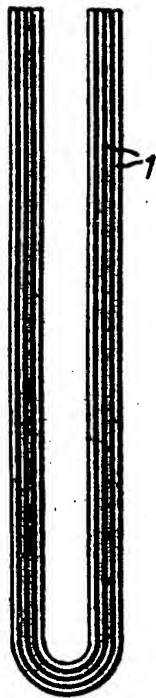


FIG. 1



FIG. 2

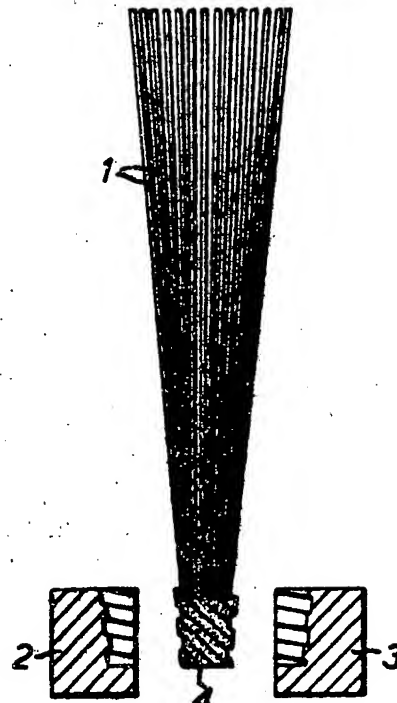


FIG. 3

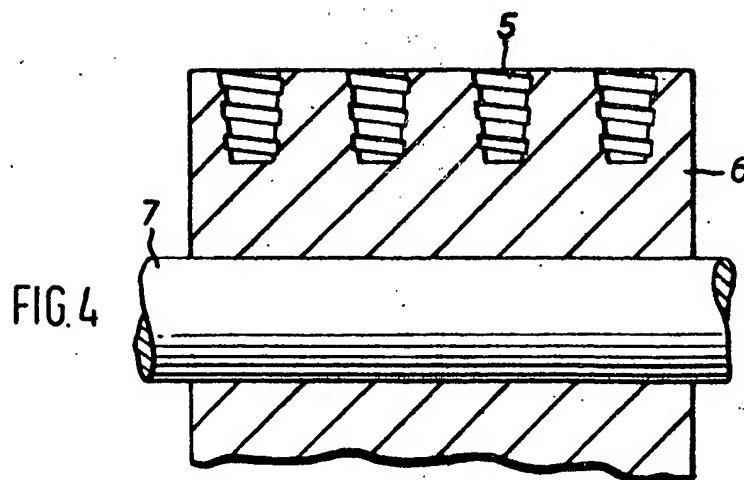


FIG. 4

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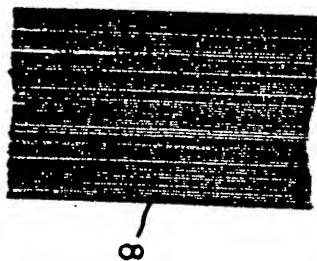


FIG. 5

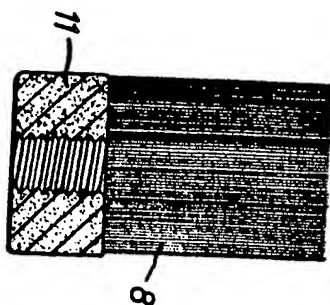


FIG. 7

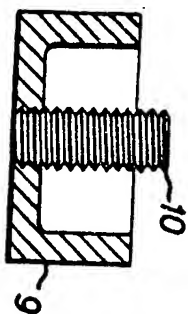


FIG. 6

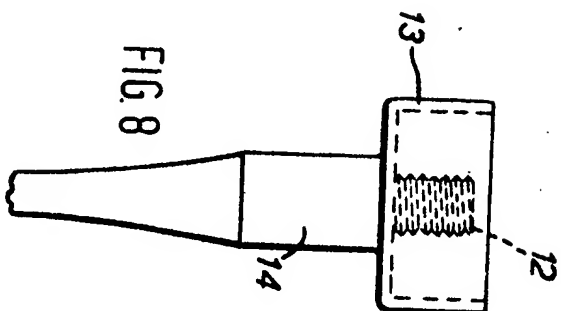


FIG. 8

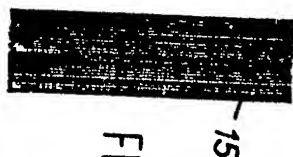


FIG. 9



FIG. 10

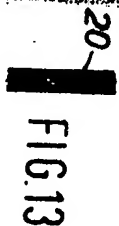


FIG. 13

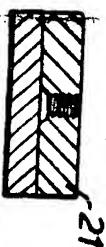


FIG. 14

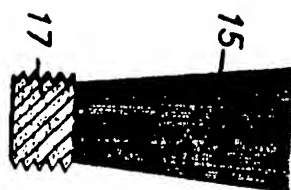


FIG. 11

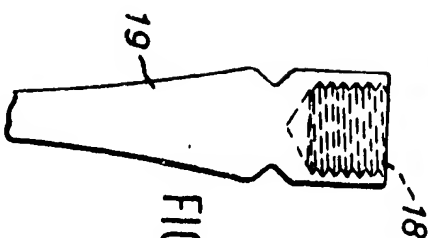


FIG. 12



FIG. 15

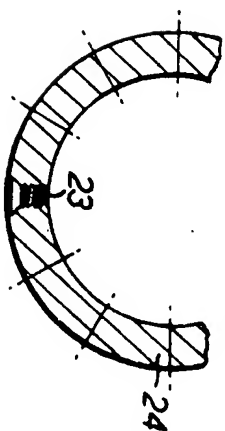


FIG. 16